

SEASONAL DISTRIBUTION AND NATURAL HISTORY OF THE PATAGONIAN TYRANT (*COLORHAMPHUS PARVIROSTRIS*)

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ABSTRACT.—We studied the distribution and ecology of the Patagonian Tyrant (*Colorhamphus parvirostris*), a migratory insectivorous passerine, using data from museum specimens, literature references, and personal observations. Our analyses indicated that *C. parvirostris* is associated primarily with southern beech (*Nothofagus* spp.) forest, and breeds along the western and eastern slopes of the Andes from Tierra del Fuego north to the Coronel/Pichinahuel area of Chile. The species winters mainly in central Chile, as far north as El Palomo and Ovalle, but small numbers winter between Concepción and Chiloé, within the species' breeding range. In winter, *C. parvirostris* occupies *Nothofagus* forest in the southern part of its range, but is found in riparian forest and woodland in central Chile. Several controversial nesting records for the species are considered and accepted, but the assertion that *C. parvirostris* occurs in eastern Argentina is shown to be in error. Received 25 Oct. 1993, accepted 5 May 1994.

RESUMEN.—La distribución y ecología del pequeño tiránido migratorio la Viudita (*Colorhamphus parvirostris*) fueron estudiadas usando información obtenida de especímenes de museo, literatura y observaciones personales. Nuestro análisis indica que la distribución de *C. parvirostris* está asociada primariamente con la distribución del bosque de *Nothofagus* spp. La especie nidifica en ambos lados de la Cordillera andina, desde Tierra del Fuego hasta la zona de Coronel/Pichinahuel en Chile. La gran mayoría de individuos pasan el invierno en Chile central, llegando como límite norte hasta El Palomo y Ovalle, pero algunos individuos permanecen durante el invierno entre Concepción y Chiloé, que está dentro de su área de nidificación. Durante el invierno *C. parvirostris* ocupa el bosque de *Nothofagus* en la parte sur de su distribución, pero en Chile central se encuentra en bosques y arboladas en quebradas húmedas. Varios registros de nidificación para la especie que han sido considerados polémicos, fueron revisados y aceptados. Se demuestra que la aseveración que *C. parvirostris* ocurre al este de Argentina es un error.

The Patagonian Tyrant (*Colorhamphus parvirostris*) is a small, uncommon migratory passerine of Chile and Argentina, one of some 230 austral migrants, species that breed in southern South America and migrate north for the austral winter (Chesser 1994). The sole member of its genus, it was described originally by Darwin (1839) as *Myiobius parvirostris* and has been placed in the genera *Tyrannula* (Hartlaub 1853), *Serpophaga* (Selater 1867), *Elainea* (*Elaenia* [as *E. murina*]) (Philippi 1895), and *Muscicapa* (Philippi 1902), in addition to *Colorhamphus* (Sundevall 1872 in Cory and Hellmayr 1927). More recently, Traylor (1977) merged the genus into *Ochthoeca*, as had Berlepsch (1907). Lanyon (1986) resur-

rected *Colorhamphus* as the sister genus to *Ochthoeca* in his study of syrinx morphology in the *Empidonax* assemblage of tyrant-flycatchers, a view that was followed by Sibley and Monroe (1990). Although known to inhabit the eastern and western slopes of the southern Andes, the distribution of *C. parvirostris*, both breeding and winter, has been the subject of some controversy. Pässler (1922), for instance, reported two nests of this species near Coronel (Prov. Concepción, central Chile), but according to Hellmayr (1932) it is "extremely unlikely that the bird found breeding by Pässler . . . pertained to the present species" (p. 145). Likewise, Olog (1963) indicated Buenos Aires (Argentina) in the breeding range of *C. parvirostris*, and Meyer de Schauensee (1966, 1970) and Sibley and Monroe (1990) reported the winter range as extending north to Buenos Aires. However, Traylor (1979), Narosky and Yzurieta (1987), and Fjeldså and Krabbe (1990) restricted the Argentine distribution of the species to the southwestern portion of the country.

Detailed analyses of distributional records have revealed that actual breeding and wintering ranges of migratory South American species can differ considerably from published accounts (e.g., Renssen and Parker 1990, Marantz and Renssen 1991). Here we analyze the seasonal and geographic distribution of *C. parvirostris* in detail, review all nesting records of the species, summarize its ecology, and present new distributional and ecological data.

METHODS

We obtained distributional data from museum specimens of *C. parvirostris*, from literature references, and from personal observations. We gathered data on specimens from South and North American museums housing major collections of Argentine and Chilean birds, and solicited data from museums that we were unable to visit personally (e.g., several European collections). Data taken from each specimen included locality, date, sex, collector, and any supplemental information. Geographical coordinates for localities were determined from the Argentine and Chilean gazetteers of Paynter (1985, 1988), and elevations, where not noted on specimen labels, were taken from the same sources. Chilean localities not in Paynter (1988) were obtained from maps. Localities cited in the text are followed by geographical coordinates (degrees and minutes south, degrees and minutes west) as in Paynter (1985, 1988). Chilean provinces are cited in accordance with the new "region and province system" of Chile. MMA gathered field data in Chile during January 1976 (austral summer) at Nahuelbuta and Pichinahuel (both Prov. Malleco), from January through March 1981 (austral summer) on Isla Chiloé (Prov. Chiloé), from April through September 1980 and May through September 1981 at El Portezuelo, Lo Barnechea, and Colina (Prov. Santiago), and Huilmo (Prov. Limarí), and during August 1993 (austral winter) at San Manuel (Prov. Melipilla).

RESULTS

Breeding distribution.—We located 123 specimens of *C. parvirostris* containing at least the date and locality of collection (Appendix I), and

TABLE I
PUBLISHED RECORDS OF NESTS OF *COLORIAMPHUS PARVIROSTRIS*

Locality	Latitude (S)	Longitude (W)	Date	Contents	Source
ARG: Río Negro, Isla Victoria [ca 800 m]	40°56'	71°33'	26 Oct. 1984	In construction	Saibene 1988
			19 Nov. 1984	One egg	
ARG: Río Negro, Lago Hess [ca 800 m]	41°22'	71°43'	Jan. 1938	Three eggs	Zotta 1939
ARG: Río Negro, S.C. de Bariloche [767 m]	41°09'	71°18'	5 Jan. 1988	Three eggs	Casas 1990
			10 Jan. 1988	Two eggs, one nestling	
ARG: Chubut, Esquel [ca 1000 m]	42°54'	71°19'	15 Jan. 1987	One egg	Casas 1990
CHL: Tierra del Fuego, Tierra del Fuego	ca 54°00'	ca 69°00'	Dec. 1938	Two eggs	Johnson 1967
CHL: Concepción, Coronel [10 m]	37°01'	73°08'	22 Dec. 1915	Three eggs	Pässler 1922
CHL: Concepción, Coronel [10 m]	37°01'	73°08'	19 Jan. 1908	Two eggs	Pässler 1922
CHL: Malleco, Pichinahuel [ca 1200 m]	ca 37°40'	ca 73°00'	19 Jan. 1976	Three nestlings	Marín et al. 1989
CHL: Malleco, Pichinahuel [ca 1200 m]	ca 37°40'	ca 73°00'	19/20 Jan. 1976	Two nestlings	Marín et al. 1989
CHL: Malleco, Pichinahuel [ca 1200 m]	ca 37°40'	ca 73°00'	20 Jan. 1976	Two nestlings	Marín et al. 1989

10 purported nesting records (Table 1). Hellmayr (1932) additionally mentioned Isla Hoste and "along the Straits of Magellan" as nesting localities, but, although these localities are consistent with the specimen record, he provided no details for them. The record for the Straits of Magellan is apparently based on Stone's (1928) report of the collection of juvenile birds at Punta Arenas in January 1899 (see also Appendix I). Nesting records extend by date from 26 October, when the nest found by Saibene (1988) was under construction, to 19–20 January when three nests with nestlings were discovered (Marín et al. 1989). Of the specimen records, only six are from late October to January, with an additional four from February, when the species is still on its breeding grounds (see below), and eight from the breeding area in March. Almost all austral summer specimen records fall within the geographical extremes of the breeding records. Nest records indicate that the breeding range extends from southern Chilean Tierra del Fuego northward through southern Chile to the Coronel/Pichinahuel area (Regions VIII through XII) and east of the Andes in southwestern Argentina in the provinces of Chubut, Río Negro, and Neuquén. We also include the provinces of Santa Cruz and Tierra del Fuego, Argentina, in the breeding range on the basis of specimen records (Fig. 1). Breeding elevations extend from sea level to 1800 m (Hellmayr 1932).

Colorhamphus parvirostris appears to be uncommon throughout its breeding range. Olrog (1948) encountered it rarely in Tierra del Fuego and Province Magallanes. Philippi et al. (1954) failed to see or hear the species in Tierra del Fuego and heard it in Magallanes only twice, at Río Rubens (5154/7135) and Estancia Río Paine (5111/7258). Although he expected *C. parvirostris* to be present, Philippi (1939) did not find it in his travels in Aysén, nor did Riveros (1979) encounter it at Parque Nacional "Laguna San Rafael," Aysén. Clark et al. (1984) reported *C. parvirostris* to be scarce on Isla Guafo (4336/7443), and Barría (1972) described it as fairly scarce at two localities on Isla Chiloé between Dalcahue (4223/7340) and Mocopulli (4221/7343). During a survey of Isla Chiloé from January to March 1981, MMA found it uncommon and present only on the eastern side of the island. The species was also uncommon at Pichinahuel in January 1976. In Argentina, Saibene (1988) recorded it as scarce on Isla Victoria (4056/7133), where Contreras (1975) netted five individuals in February and March 1972 or 1973. Reynolds (1934, 1935) did not mention the species in his papers on the birds of Isla Grande. Although Humphrey et al. (1970) reported it "from but a few records," they cited only one specimen at one locality (Lapataia). Sielfeld (1977) found it extremely rare at the extreme southern limit of *Nothofagus* forest on Isla Hoste (5505/6850), and collected only one spec-

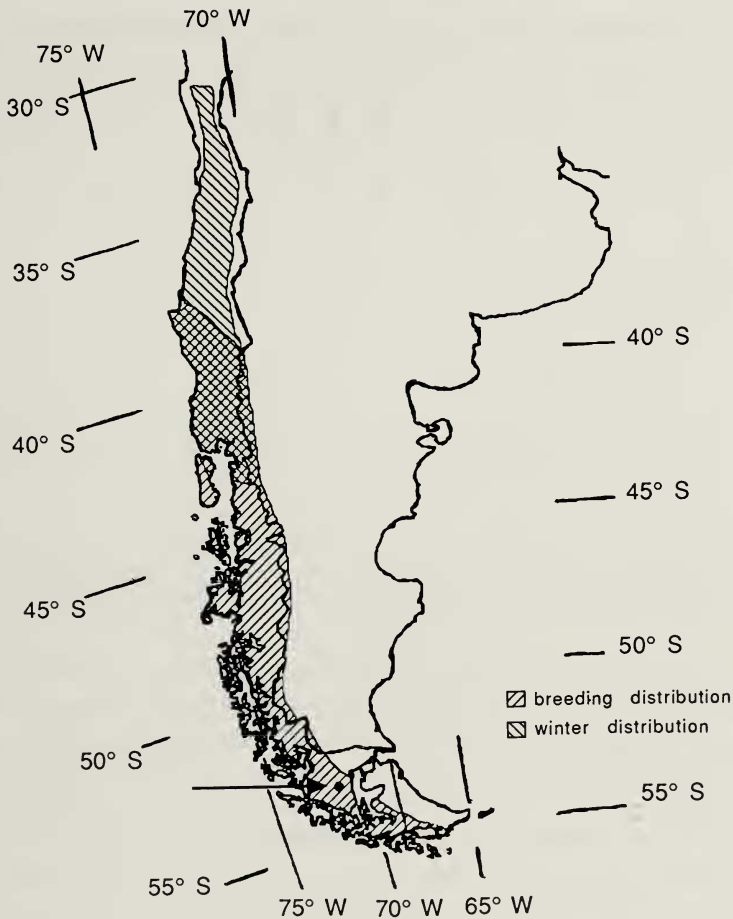


FIG. 1. Distribution of *Colorhamphus parvirostris*. The arrow and dot represent the winter specimen taken in June 1914 at Punta Arenas, more than 1000 km south of the next southernmost winter record.

imen. Likewise, Chebez and Gómez (1988) encountered it only once on Argentine Tierra del Fuego during December 1985 and January 1986.

Migration and winter distribution.—In winter, many individuals move north to occupy areas outside the breeding range, whereas small numbers remain within the breeding range (Figs. 1, 2). Such migration, characterized by partially overlapping breeding and wintering ranges, is typical of austral migrants (Chesser 1994). *C. parvirostris* extends its range northward in winter from the Concepción area in central Chile to Ovalle and El Palomo in the north (Fig. 1). The earliest records from the wintering

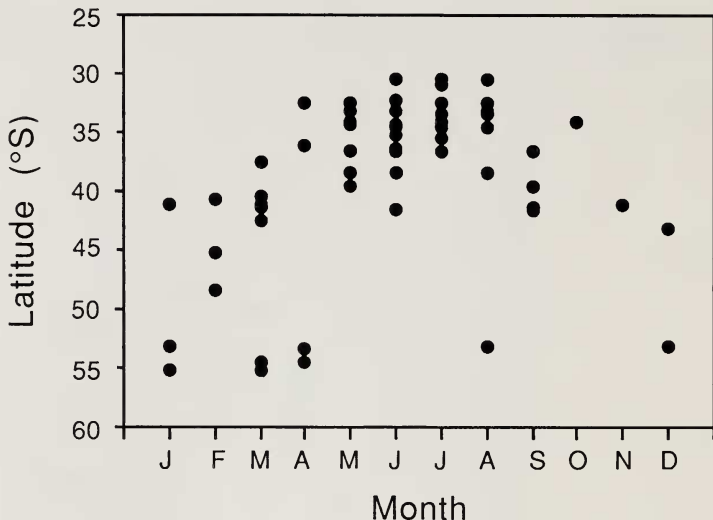


FIG. 2. Specimen records of *Colorhamphus parvirostris* by month of collection and latitude. Note especially the seasonality of occurrence at the northern end of its range.

range have been from late March; Barros (1966) reported individuals from Linares (3551/7136) on 21 March 1949 and 28 March 1948, and from the end of March in Río Blanco (3255/7019) and other parts of the Cordillera Aconcagua. In most years and most places, the first migrants reach the northern part of the wintering range in April (Barros 1920, 1921, 1966) after the first rains (Barros 1920), and by May the species is common (Barros 1921, 1966). Vuilleumier (in litt.) observed a single individual on 3 April 1965 in stunted *Nothofagus* forest at Termas de Chillan (3654/7131). At Colina (3312/7041) in 1981, the species first appeared on 27 April. Egli (1986) reported the first individuals at Rinconada de Maipú (ca 3331/7046) in April (1983, 1984) and May (1982). Except for the winter record from Punta Arenas (see below), late dates from the southern part of the breeding range are two specimens from Prov. Magallanes, Chile, on 17 April 1971 and one from Argentine Tierra del Fuego on 24 April 1971.

Winter records for *C. parvirostris* extend from Ancud, Chile (4152/7350), and El Bolsón, Argentina (4158/7131), in the south to Prov. Limarí, Chile, in the north, with the exception of a single specimen from Punta Arenas (5309/7055) in August 1914. Numerous specimens were secured at Huilmo (3050/7105) in 1981 and El Palomo (ca 3046/7110) in 1984, a northern range extension, the previous northernmost record having been from the Río Cenicero, Prov. Choapa (3128/7046) (cited by

Philippi [1964], but without date of collection). MMA also observed the species on the outskirts of Ovalle (3036/7112) in 1981, although no specimens were collected at this locality. Barros (1966) found *C. parvirostris* much more common in winter in mountainous areas than along the coast and saw it frequently in foothills and valleys to 2000 m and above. North of the Santiago region, the species is not found along the coast, where the habitat becomes xerophytic and scrubby.

The species is apparently rare during winter within the central and southern portions of its breeding range. Only one of the nine Argentine specimens is from winter—28 June 1961 from El Bolsón, Río Negro (4158/7131)—and Saibene (1988), who reported the species nesting in Río Negro province, did not observe it there during winter. A Chilean winter specimen from well within the breeding range was collected at Ancud (4152/7350), and Barros (1948, 1966) noted several birds during winter at Maullín (4138/7337) in 1948. The southernmost winter specimen, by more than 1000 km, was collected 3 Aug. 1914 at Punta Arenas (Fig. 1). Darwin (1839) reported collecting an individual of this species in June in Tierra del Fuego and indicated that it probably remains throughout the year in southern South America, but the bird is not in the British Museum (Sclater 1888; data from British Museum) with his other specimens and may have been misidentified.

Migration southward to the breeding grounds begins in August and continues through September (Barros 1920, 1966). Late dates for *C. parvirostris* on its wintering grounds include 11 Sept. 1949 in Linares (3551/7136), 8 Sept. 1937 at Conchalí (3153/7129), 4 Sept. 1953 along the coast of Province San Antonio (ca 33337/7137) (Barros 1966), and 6 Sept. 1981 at Lo Barnechea (3321/7031). An extremely late wintering bird was collected in Valle La Engorda (ca 3410/6950) on 12 Oct. 1961. The late date and high elevation (2700 m) of the specimen suggest that the bird was probably a vagrant. Olrog (1948) collected specimens during migration at Enco (3953/7211), 27 Sept. 1940, and migration continues into October, when individuals have been noted arriving at Isla Grande (Fjeldså and Krabbe 1990).

Natural history.—The nest and eggs of *C. parvirostris* were first described by Pässler (1922), and his paper contains the essential features of the nest as described by most observers. The first nest was cup-shaped, located 2.5 m above ground in a “Boldobusch” (*Peumus boldus*) and constructed of dry grass stems and plant fibers. The second nest was similar, but the exterior was lined with moss. Descriptions of nests by other authors (Table 1) approximate Pässler’s description; nests are usually cup-shaped and situated low in a shrub, made of plant fibers, and lined outside with moss. Marín et al. (1989), for instance, described three

nests "in the thick understory of a beech (*Nothofagus*) forest, at 50–110 cm above the ground in 80–120 cm tall shrubs growing along creeks. They were cup-shaped structures of grass and moss, lined with fine grasses and some feathers." Pässler (1922) described the eggs as oval, white or light cream colored, with small, rusty red or reddish-brown spotting on the larger end, sometimes forming an irregular wreath. Dimensions of five eggs (Pässler 1922) averaged 19.2×15.1 mm ($\pm 0.6 \times 0.3$). These are again typical of the species.

The breeding range of the species coincides with the presence of *Nothofagus* forest as discussed in Vuilleumier (1985, 1991). According to Fjeldså and Krabbe (1990), the species breeds only in *Nothofagus* forest, and Vuilleumier (1985) listed it as endemic to Patagonian forests, ranging from rain forest and montane forest to mesophytic forest and parkland. Darwin (1839) found *C. parvirostris* in the forests of Tierra del Fuego, and Venegas and Jory (1979) noted that in Magallanes it is seen and heard only in areas of forest and woodland. During this season, at the extreme southern end of its range, it is found in the upper forest stratum, occupying the same zone as the White-crested Elaenia (*Elaenia albiceps*) (Sielfeld 1977). However, MMA consistently found it sally-striking (sensu Remsen and Robinson 1990) in the understory in 1977 at Nahuelbuta, at the northern end of the breeding range.

In winter, *C. parvirostris* extends its range outside and north of the beech forest. Habitats occupied by the species are more diverse at this time than during the breeding season, and its elevational range also increases. Goodall et al. (1946) noted that it can be found regularly in small numbers along the valleys and streams of the Andean pre-cordillera, in the coastal region, and in gardens of the cities of the Central Valley. The species may be found near small streams, where it perches low on bushes or weeds and sallies for passing insects in similar fashion to other small flycatchers (Wetmore 1926). Goodall et al. (1946), however, maintained that it is essentially arboreal, spending nearly all its time in treetop foliage, especially quillay (*Quillaja saponaria*) and maitén (*Maitenus boaria*) trees, and that it flies only occasionally and for short distances (presumably referring to the sallying noted by other observers). When insects are scarce in the mountains, it feeds on seeds of the maitén (Barros 1966); numbers of *C. parvirostris* are low in years when these seeds are few (Barros 1921). Jaffuel and Pirion (1928) reported large numbers in June at Valle de Marga-Marga (3301/7134), hunting for insects along the length of the valley. Housse (1925) noted this species feeding on small seeds at San Bernardo (3336/7043).

Our winter data, from San Manuel, Prov. Melipilla, indicate that *C. parvirostris* sally-strikes horizontally from low perches (typically 1.5–2.0

m) in bushes or small, defoliated trees. Espino (*Acacia cavens*) and the introduced American elm (*Ulmus americana*) are most commonly used, and the birds prefer perches on the outer positions and lower halves of the trees. In addition to sallies, individuals occasionally search live or dead leaves for insects. Sally-distance is variable, generally from 0.5 to 3 m. Occasional low flights are made; apparently the birds feed on flushed insects during these flights. The highest densities of *C. parvirostris* occurred in riparian forest with mixed native trees, although this species also was present in trees and bushes along field edges.

DISCUSSION

Colorhamphus parvirostris breeds primarily in *Nothofagus* forest along the eastern and western slopes of the Andes from the Tierra del Fuego archipelago north to the Coronel/Pichinahuel area. The species winters uncommonly in its breeding range and becomes fairly common in winter in regions of Chile north of the breeding range. North of Santiago, wintering individuals are more common along Andean slopes and valleys than in lowland, coastal areas, and the northern limit of the winter range appears to lie in Province Limarí. Autumn migration takes place primarily in April and early May, and spring migration in September and October. *Colorhamphus parvirostris* has been reported to have a breeding (Olrog 1963) and wintering (Meyer de Schauensee 1966, 1970) range in Argentina far beyond the Patagonian region reported here. These assertions are apparently the result of misinterpretation of Zotta's (1939) nesting record and the accretion of subsequent errors. Olrog (1963) cited Buenos Aires as the nest locality reported by Zotta, an error repeated by Johnson (1967), who nevertheless doubted the validity of the record. Meyer de Schauensee (1966, 1970) corrected these statements; however, he included Buenos Aires in the winter range of *C. parvirostris*, and this error was repeated by Sibley and Monroe (1990). We accept neither these assertions nor the discredited (Hellmayr 1932) report of Darwin (1839) that he collected this species along the banks of the Río de La Plata, and we note that Narosky and Di Giacomo (1993) reached the same conclusion. We were able to locate valid Argentine records only from the Patagonian provinces of Neuquén, Río Negro, Chubut, Santa Cruz, and Tierra del Fuego.

As mentioned above, several nesting records of *C. parvirostris* have been challenged as not pertaining to this species. Hellmayr (1932) considered the identification of the nests found by Pässler (1922) to be questionable, because of the lack of an accompanying specimen and presumably due to the great distance between Pässler's Coronel locality and the then-known Chilean nesting range (reported by Hellmayr as Isla Hoste and Tierra del Fuego). However, the nests and eggs described by Pässler

do not differ substantially from other nests and eggs reported for this species, and the three nests found at Pichinahuel (Marín et al. 1989) confirm that *C. parvirostris* nests as far north as the Concepción area. Thus, we consider these nest records valid. Johnson (1967) rejected Zotta's (1939) nest record from Buenos Aires as too far from the normal breeding range of the species and too divergent in nest description and egg size from a nest in Chilean Tierra del Fuego, and Casas et al. (1990) likewise questioned whether Zotta's nest pertained to *C. parvirostris*. We have shown that Johnson misreported the nesting locality, and we fail to see that the eggs reported by Zotta (white with small chestnut-reddish spots, primarily on the larger end; 19×14 mm) differ greatly from others of this species. Although the nest differed in its elongated form from other records (see photograph in Zotta 1939), the measurements, placement, and materials of the nest are similar to those of Pässler (1922), Marín et al. (1989), and others, as outlined previously. We note that the form of the nest was probably influenced by the substrate ("arbustos de retama" [broom]). Therefore, we believe Zotta's nest record to be valid.

The overlap of breeding and wintering ranges exhibited by *C. parvirostris* is typical of Chilean migrants in general. Of some 37 migrant passerine species breeding in Chile, for instance, only a handful (e.g., the White-browed Ground-Tyrant [*Muscisaxicola albilora*]) appear to vacate the country during the austral winter (Fjeldså and Krabbe 1990; Chesser, unpubl. data). Most Chilean migrants, such as *C. parvirostris*, leave the southern part of their breeding range in winter or the northern part of their wintering range in summer, but may be found throughout the year in other parts of their range. Still others, such as the Austral Thrush (*Turdus falcklandii magellanicus*) may undergo seasonal shifts in population density, with little change in range (Chesser, unpubl. data).

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APPENDIX I
SPECIMENS OF *COLORHAMPHUS PARVIROSTRIS* FOR WHICH DATE AND LOCALITY OF COLLECTION ARE AVAILABLE,
ARRANGED BY MONTH AND DAY OF COLLECTION

Date	Locality ^a	Latitude (S)	Longitude (W)	Collector ^b
Jan. 1938	ARG: Río Negro, Lago Hess [ca 800 m]	41°22'	71°43'	MACN
Jan. 1977	CHL: Antártica, Isla Hoste, Seno Ponsonby	55°05'	68°50'	c
2 Jan. 1898	CHL: Magallanes, Punta Arenas [sea level]	53°09'	70°55'	FMNH
3 Jan. 1898	CHL: Magallanes, Punta Arenas [sea level]	53°09'	70°55'	AMNH
3 Jan. 1898	CHL: Magallanes, Punta Arenas [sea level]	53°09'	70°55'	FMNH
3 Jan. 1898	CHL: Magallanes, Punta Arenas [sea level]	53°09'	70°55'	FMNH
17 Jan. 1990	ARG: Chubut, Lago Vintter [925 m]	43°56'	71°40'	KUMNH
17 Jan. 1990	ARG: Chubut, Lago Vintter [925 m]	43°56'	71°40'	KUMNH
17 Jan. 1990	ARG: Chubut, Lago Vintter [925 m]	43°56'	71°40'	KUMNH
Feb. 1937	ARG: Neuquén, Sierra de Pilpil, 1500 m	ca 40°58'	ca 71°30'	MACN
Feb. 1939	ARG: Santa Cruz, Lago San Martín [285 m]	48°52'	72°40'	MACN
Feb. 1939	ARG: Santa Cruz, Lago San Martín [285 m]	48°52'	72°40'	MACN
4 Feb. 1962	CHL: Coihaique, Coihaique Alto, 650 m	45°29'	71°36'	CAFB
13 Feb. 1983	CHL: Magallanes, I. Capitán Aracena, B. Morris	54°15'	71°00'	FMNH
17 Feb. 1984	CHL: Osorno, Refugio de la Picada [505 m]	41°04'	72°48'	FMNH
Mar. 1895	ARG: Tierra del Fuego, Lapataja [sea level]	54°53'	68°10'	d
Mar. 1895	CHL: Antártica, B. Tekemika, False Cape Horn	55°43'	68°05'	d
Mar. 1928?	CHL: Malleco, Valle de Angol, Angol [72 m]	37°48'	72°43'	MHNV
4 Mar. 1972	ARG: Neuquén, M. Redondo, Isla Victoria [800 m]	40°56'	71°33'	PROBBAS
21 Mar. 1939	CHL: Llanquihue, Puerto Montt [sea level]	41°28'	72°57'	CM
23 Mar. 1981	CHL: Chiloé, Laguna Pío-Pío [ca 80 m]	42°49'	73°34'	WFVZ
25 Mar. 1981	CHL: Chiloé, Laguna Pío-Pío [ca 80 m]	42°49'	73°34'	WFVZ
28 Mar. 1981	CHL: Chiloé, Laguna Pío-Pío [ca 80 m]	42°49'	73°34'	WFVZ
11 Apr. 1895	CHL: Ñuble, Llohué [ca 200 m]	36°20'	72°24'	BMNH

APPENDIX 1
CONTINUED

Date	Locality ^a	Latitude (S)	Longitude (W)	Collection ^b
17 Apr. 1971	CHL: Magallanes, Fuerte Bulnes, 30 m	53°37'	70°56'	USNM
17 Apr. 1971	CHL: Magallanes, Fuerte Bulnes, 30 m	53°37'	70°56'	USNM
24 Apr. 1971	ARG: Tierra del Fuego, Bahía Buen Suceso	54°47'	65°15'	USNM
26 Apr. 1921	CHL: Valparaíso, Concón [sea level]	32°55'	71°31'	USNM
27 Apr. 1921	CHL: Valparaíso, Concón [sea level]	32°55'	71°31'	USNM
May 1854	CHL: Santiago, Santiago [500 m]	33°27'	70°40'	MINHN
3 May 1923	CHL: Cachapoal, Baños de Cauquenes [ca 600 m]	34°15'	70°34'	FMNH
4 May 1924	CHL: C. Caro, Valle de Nilahue [ca 100 m]	34°34'	71°48'	LACM
9 May 1910	CHL: Cautín, Temuco [113 m]	38°44'	72°36'	BMNH
15 May 1940	CHL: Valdivia, Corral [sea level]	39°52'	73°26'	^e
16 May 1943	CHL: Concepción, San Pedro [13 m]	36°52'	73°05'	CAFB
20 May 1903	CHL: Concepción [9 m]	36°50'	73°03'	AMNH
20 May 1903	CHL: Concepción [9 m]	36°50'	73°03'	AMNH
20 May 1910	CHL: Cautín, Temuco, Petal [92 m]	38°50'	72°40'	BMNH
21 May 1925	CHL: Los Andes, Los Andes [816 m]	32°50'	70°37'	AMNH
Jun. 1865	CHL: Santiago, vicinity of Santiago [ca 500 m]	ca 33°27'	ca 70°40'	USNM
Jun. 1894	CHL: Concepción, Tumbes	36°40'	73°08'	^d
Jun. 1939	CHL: Curicó, Curicó [ca 225 m]	34°59'	71°14'	MLP
Jun. 1939	CHL: Talca, Camarico [ca 100 m]	35°13'	71°25'	MLP
1 Jun. 1914	CHL: Chiloé, Ancud [109 m]	41°52'	73°50'	AMNH
14 Jun. 1932	CHL: Santiago, Las Condes [ca 700 m]	33°22'	70°31'	BMNH
14 Jun. 1932	CHL: Santiago, Las Condes, [ca 700 m]	33°22'	70°31'	BMNH
14 Jun. 1932	CHL: Santiago, Las Condes, [ca 700 m]	33°22'	70°31'	BMNH
17 Jun. 1939	CHL: Concepción, Concepción [9 m]	36°50'	73°03'	CAFB
21 Jun. 1894	CHL: Valparaíso, San Alfonso [sea level]	32°37'	71°21'	^f
21 Jun. 1894	CHL: Valparaíso, San Alfonso [sea level]	32°37'	71°21'	^f

APPENDIX I
CONTINUED

Date	Locality ^a	Latitude (S)	Longitude (W)	Collection ^b
21 Jun. 1907	CHL: Cautín, Maquehue [115 m]	38°46'	72°37'	BMNH
25 Jun. 1895	CHL: Cachapoal, Santa Teresa (Requinoa)	34°26'	70°50'	BMNH
26 Jun. 1894	CHL: Valparaíso, San Alfonso [sea level]	32°37'	71°21'	BMNH
26 Jun. 1894	CHL: Valparaíso, San Alfonso [sea level]	32°37'	71°21'	BMNH
27 Jun. 1981	CHL: Limarí, Punitaqui, 300 m	30°50'	71°15'	WFVZ
28 Jun. 1961	ARG: Río Negro, El Bolsón [384 m]	41°58'	71°31'	LACM
28 Jun. 1981	CHL: Limarí, Huilmo, 800 m	30°50'	71°05'	WFVZ
28 Jun. 1981	CHL: Limarí, Huilmo, 800 m	30°50'	71°05'	WFVZ
29 Jun. 1981	CHL: Limarí, Huilmo, 800 m	30°50'	71°05'	WFVZ
Jul. 1934	CHL: Cordillera, Valle del Maipo, 1200 m	33°37'	71°39'	MCZ
Jul. 1934	CHL: Cordillera, Valle del Maipo, 2000 m	33°37'	71°39'	MCZ
Jul. 1934	CHL: Cordillera, Valle del Maipo, 2000 m	33°37'	71°39'	MCZ
Jul. 1934	CHL: Cordillera, Valle del Maipo, 2000 m	33°37'	71°39'	MACN
2 Jul. 1981	CHL: Cordillera, Valle del Maipo, 2000 m	33°37'	71°39'	WFVZ
2 Jul. 1981	CHL: Limarí, Las Ramadas, 1500 m	31°02'	70°36'	WFVZ
2 Jul. 1981	CHL: Limarí, Las Ramadas, 1500 m	31°02'	70°36'	WFVZ
4 Jul. 1959	CHL: Melipilla, Alhué	poss. 34°02'	poss. 71°06'	WFVZ
4 Jul. 1959	CHL: Melipilla, Alhué	poss. 34°02'	poss. 71°06'	WFVZ
4 Jul. 1981	CHL: Limarí, Huilmo, 800 m	ca 30°50'	ca 71°05'	WFVZ
10 Jul. 1981	CHL: Limarí, Huilmo, 800 m	ca 30°50'	ca 71°05'	WFVZ
11 Jul. 1939	CHL: Concepción, Concepción [9 m]	36°50'	73°03'	CAFB
13 Jul. 1925	CHL: Los Andes, Los Andes, 1500 m	32°50'	70°37'	FMNH
14 Jul. 1939	CHL: Curicó, Llico [sea level]	34°46'	72°05'	LACM
18 Jul. 1922	CHL: Los Andes, Los Andes, 840 m	32°50'	70°37'	LACM
19 Jul. 1921	CHL: Los Andes, Los Andes, 840 m	32°50'	70°37'	LACM
20 Jul. 1945	CHL: Linares, Linares [ca 100 m]	35°51'	71°36'	MACN

APPENDIX 1
CONTINUED

Date	Locality ^a	Latitude (S)	Longitude (W)	Collection ^b
Aug. 1935	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	MLP
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	MCZ
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	MCZ
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	FML
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	MLP
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	MLP
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	MLP
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	BMNH
Aug. 1938	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	BMNH
Aug. 1984	CHL: Limarí, El Palomo [ca 1700 m]	ca 30°46'	ca 71°10'	WFVZ
Aug. 1984	CHL: Limarí, El Palomo [ca 1700 m]	ca 30°46'	ca 71°10'	WFVZ
Aug. 1984	CHL: Limarí, El Palomo [ca 1700 m]	ca 30°46'	ca 71°10'	WFVZ
Aug. 1984	CHL: Limarí, El Palomo [ca 1700 m]	ca 30°46'	ca 71°10'	WFVZ
Aug. 1984	CHL: Limarí, El Palomo [ca 1700 m]	ca 30°46'	ca 71°10'	WFVZ
Aug. 1984	CHL: Limarí, near Punitaqui [ca 500 m]	30°50'	71°05'	WFVZ
1 Aug. 1952	CHL: Valparaíso, Quinteros [sea level]	32°47'	71°32'	YPM
1 Aug. 1952	CHL: Valparaíso, Concón [sea level]	32°55'	71°31'	YPM
1 Aug. 1952	CHL: Cachapoal, Rancagua [499 m]	34°10'	70°45'	YPM
3 Aug. 1914	CHL: Magallanes, Punta Arenas [sea level]	53°09'	70°55'	AMINH
4 Aug. 1940	CHL: Cordillera, Río Colorado, 1000 m	33°27'	70°40'	MCZ
10 Aug. 1952	CHL: San Antonio, El Quisco [sea level]	33°24'	71°42'	UMMZ
10 Aug. 1981	CHL: Chacabuco, Colina, El Portezuelo, 650 m	33°20'	70°42'	WFVZ
11 Aug. 1920	CHL: Los Andes, Río Blanco, 1550 m	32°55'	70°19'	AMINH

APPENDIX 1
CONTINUED

Date	Locality*	Latitude (S)	Longitude (W)	Collector ^b
11 Aug. 1920	CHL: Los Andes, Río Blanco, 1550 m	32°55'	70°19'	AMNH
11 Aug. 1920	CHL: Los Andes, Río Blanco, 1550 m	32°55'	70°19'	LACM
12 Aug. 1920	CHL: Los Andes, Río Blanco, 1550 m	32°55'	70°19'	AMNH
12 Aug. 1920	CHL: Los Andes, Río Blanco, 1550 m	32°55'	70°19'	LACM
12 Aug. 1923	CHL: Los Andes, Río Blanco, 1550 m	32°50'	70°37'	LACM
13 Aug. 1969	CHL: Melipilla, Malvilla	33°44'	71°13'	WVZ
15 Aug. 1920	CHL: Los Andes, Río Blanco, 1540 m	32°55'	70°19'	LACM
15 Aug. 1924	CHL: Los Andes, Río Blanco, 1540 m	32°55'	70°19'	FMNH
15 Aug. 1924	CHL: Los Andes, Río Blanco, 1560 m	32°55'	70°19'	UMMZ
15 Aug. 1947	CHL: Santiago, Baños de Colina [600 m]	33°11'	70°36'	MCZ
20 Aug. 1965	CHL: Talagante, Talagante [ca 500 m]	33°40'	70°56'	MNH
23 Aug. 1916	CHL: Santiago, Apoquindo [1000 m]	33°24'	70°32'	AMNH
24 Aug. 1916	CHL: Santiago, Apoquindo [1000 m]	33°24'	70°32'	AMNH
24 Aug. 1931	CHL: Santiago, Las Condes [ca 700 m]	33°22'	70°31'	BMNH
25 Aug. 1932	CHL: Santiago, La Dehesa [875 m]	33°22'	70°33'	FMNH
25 Aug. 1932	CHL: Santiago, Santiago [500 m]	33°27'	70°40'	FMNH
26 Aug. 1940	CHL: Curicó, Llico [sea level]	34°46'	72°05'	LACM
30 Aug. 1910	CHL: Cautín, Maquehue [115 m]	38°46'	72°37'	AMNH
31 Aug. 1984	CHL: Limarí, Cerro Guaquilón	ca 30°50'	ca 71°05'	WVZ
2 Sep. 1941	CHL: Llanquihue, Maulín [sea level]	41°38'	73°37'	LACM
5 Sep. 1969	ARG: Río Negro, El Bolsón [384 m]	41°58'	71°31'	LSUMZ
6 Sep. 1962	ARG: Río Negro, El Bolsón [384 m]	41°58'	71°31'	FML
12 Sep. 1944	CHL: Ñuble, Atacalco [ca 500 m]	36°50'	71°47'	CAFB
21 Sep. 1961	ARG: Río Negro, El Bolsón [384 m]	41°58'	71°31'	AMNH
27 Sep. 1940	CHL: Valdivia, Enco [ca 200 m]	39°53'	72°11'	e

APPENDIX I
CONTINUED

Date	Locality ^a	Latitude (S)	Longitude (W)	Collection ^b
27 Sep. 1940	CHL: Valdivia, Enco [ca 200 m]	39°53'	72°11'	^c
12 Oct. 1961	CHL: Cordillera, Valle de Engorda, 2700 m	34°10'	69°50'	UMMZ
10 Nov. 1938	ARG: Río Negro, Lago Hess [ca 800 m]	41°22'	71°43'	MACN
24 Dec. 1922	CHL: Chiloé, Quellón [sea level]	43°07'	73°37'	FMNH
28 Dec. 1897	CHL: Magallanes, Punta Arenas [sea level]	53°09'	70°55'	AMNH

^a Localities are arranged as follows: country, province, specific locality, elevation. The new province system was used for Chilean localities. Elevations in brackets were taken from gazetteers, the others from specimen labels.

^b AMNH = American Museum of Natural History; BMNH = British Museum (Natural History); CAFB = Colección de Aves de Francisco Behn; CM = Carnegie Museum; FML = Fundación Miguel Lillo; FMNH = Field Museum of Natural History; KUMNH = Univ. of Kansas Museum of Natural History; LACM = Los Angeles County Museum; LSUMZ = Louisiana State Univ. Museum of Natural Science; MACN = Museo Argentino de Ciencias Naturales; MCZ = Museum of Comparative Zoology; MHNV = Museo Historia Natural El Vergel; MNHN = Museo Nacional Historia Natural Santiago; MLP = Museo de La Plata; PROBBAS = Programa de Biología Básica y Aplicada Subtropical; UMMZ = Univ. of Michigan Museum of Zoology; USNM = National Museum of Natural History; WFPVZ = Western Foundation of Vertebrate Zoology; YPM = Yale Peabody Museum.

^c Specimen data from Sheffield (1977).

^d Specimen data from Schalow (1898).

^e Specimen data from Olrog (1948).

^f Specimen data from Hellmayr (1932).